Daniel Andriesse

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Professional Experience

July'19–now   **Research Engineer/Scientist**, *Intel Corporation*.
Current research focus on CPU glitching and taint tracking.

Jan'17–June'19   **Postdoctoral researcher**, *Vrije Universiteit Amsterdam, System and Network Security Group*.
Research on a variety of topics including reverse engineering and binary analysis.

Education

2017   **Ph.D.**, *Vrije Universiteit Amsterdam, System and Network Security Group*, *cum laude* (highest honor, approx. 4% of graduations).
Research on reverse engineering and binary analysis.
Advised by prof.dr.ir. Herbert Bos and co-advised by dr. Asia Slowinska.
Thesis committee: prof.dr. Andrew S. Tanenbaum, prof.dr. Thorsten Holz, prof.dr. Frank Piessens, dr. Christian Rossow, and dr. Davide Balzarotti.
Winner of the **ACM SIGSAC Doctoral Dissertation Award** and the **Roger Needham Ph.D. Award**.

2024–now   **B.Sc. Mathematics and Physics (combined degree)**, *Vrije Universiteit Amsterdam and University of Amsterdam*.

2022–now   **B.Sc. Psychology**, *Open University*.

2012   **M.Sc. Parallel and Distributed Computer Systems**, *Vrije Universiteit Amsterdam*, *cum laude* (highest honor).
Research M.Sc. ("topmaster") on systems and high performance parallel computing.
Grade average 9.0/10.0 (ECTS grade A, top 3%).

2010   **B.Sc. Computer Science**, *Vrije Universiteit Amsterdam*, *cum laude* (highest honor).
Grade average 8.9/10.0 (ECTS grade A, top 3%).

Awards and Grants

Feb'23   Intel Divisional Recognition Award

Oct'18   Winner of the 2018 ACM SIGSAC Doctoral Dissertation Award for Outstanding Ph.D. Thesis in Computer and Information Security

Apr'18   Winner of EuroSys Roger Needham Ph.D. Award for Best Ph.D. Thesis in Computer Systems in Europe

Oct'17   Best Paper Award (for the paper "The Dynamics of Innocent Flesh on the Bone: Code Reuse Ten Years Later" published at CCS'17), *3rd Cyber Security Workshop in the Netherlands (CSW-NL 2017)*, (Den Haag, The Netherlands), October 2017

Apr'17   Best Paper Award (for the paper "Compiler-Agnostic Function Detection in Binaries"), *2nd IEEE European Symposium on Security and Privacy (EuroS&P'17)*, (Paris, France), April 2017

July'14   FBI Certificate of Recognition for outstanding efforts in the takedown of GameOver Zeus

June'14   Winner of National Cyber Security Research Agenda (NCSRA) Ph.D. competition

Publications

[1]   M. Kurth, B. Gras, D. Andriesse, C. Giuffrida, H. Bos, and K. Razavi, "NetCAT: Practical Cache Attacks from the Network," in *Proceedings of the 41st IEEE Symposium on Security and Privacy (S&P'20)*, (San Francisco, CA, USA), IEEE, May 2020.

[2] A. Pawlowski, V. van der Veen, D. Andriesse, E. van der Kouwe, T. Holz, C. Giuffrida, and H. Bos, "VPS: Excavating High-Level C++ Constructs from Low-Level Binaries to Protect Dynamic Dispatching," in *Proceedings of the 2019 Annual Computer Security Applications Conference (ACSAC'19)*, (San Juan, Puerto Rico, USA), December 2019.

[3] E. van der Kouwe, G. Heiser, D. Andriesse, H. Bos, and C. Giuffrida, "SoK: Benchmarking Flaws in Systems Security," in *Proceedings of the 4th IEEE European Symposium on Security and Privacy (EuroS&P'19)*, (Stockholm, Sweden), IEEE, June 2019.

[4] F. de Goër, S. Rawat, D. Andriesse, H. Bos, and R. Groz, "Now You See Me: Real-time Dynamic Function Call Detection," in *Proceedings of the 2018 Annual Computer Security Applications Conference (ACSAC'18)*, (San Juan, Puerto Rico, USA), December 2018.

[5] R. K. Konoth, M. Oliverio, A. Tatar, D. Andriesse, H. Bos, C. Giuffrida, and K. Razavi, "ZebRAM: Comprehensive and Compatible Software Protection Against Rowhammer Attacks," in *Proceedings of the 13th USENIX Symposium on Operating Systems Design and Implementation (OSDI'18)*, (Carlsbad, CA, USA), USENIX, October 2018.

[6] E. van der Kouwe, D. Andriesse, H. Bos, C. Giuffrida, and G. Heiser, "Benchmarking Crimes: An Emerging Threat in Systems Security," 2018. Preprint (arXiv:1801.02381).

[7] V. van der Veen, D. Andriesse, M. Stamatogiannakis, X. Chen, H. Bos, and C. Giuffrida, "The Dynamics of Innocent Flesh on the Bone: Code Reuse Ten Years Later," in *Proceedings of the 24th Conference on Computer and Communications Security (CCS'17)*, (Dallas, TX, USA), ACM, October 2017.

[8] D. Andriesse, A. Slowinska, and H. Bos, "Compiler-Agnostic Function Detection in Binaries," in *Proceedings of the 2nd IEEE European Symposium on Security and Privacy (EuroS&P'17)*, (Paris, France), IEEE, April 2017. **Best Paper Award**.

[9] D. Andriesse, X. Chen, V. van der Veen, A. Slowinska, and H. Bos, "An In-Depth Analysis of Disassembly on Full-Scale x86/x64 Binaries," in *Proceedings of the 25th USENIX Security Symposium (USENIX Sec'16)*, (Austin, TX, USA), USENIX, August 2016.

[10] D. Andriesse, V. van der Veen, E. Göktaş, B. Gras, L. Sambuc, A. Slowinska, H. Bos, and C. Giuffrida, "Practical Context-Sensitive CFI," in *Proceedings of the 22nd Conference on Computer and Communications Security (CCS'15)*, (Denver, CO, USA), ACM, October 2015.

[11] D. Andriesse, C. Rossow, and H. Bos, "Reliable Recon in Adversarial Peer-to-Peer Botnets," in *Proceedings of the 15th Internet Measurement Conference (IMC'15)*, (Tokyo, Japan), ACM, October 2015.

[12] D. Andriesse, C. Rossow, and H. Bos, "Distributed Crawler Detection in Peer-to-Peer Botnets," October 2015. Technical Report IR-CS-77, VU University Amsterdam.

[13] D. Andriesse, H. Bos, and A. Slowinska, "Parallax: Implicit Code Integrity Verification Using Return-Oriented Programming," in *Proceedings of the 45th Conference on Dependable Systems and Networks (DSN'15)*, (Rio de Janeiro, Brazil), IEEE Computer Society, June 2015.

[14] X. Chen, A. Slowinska, D. Andriesse, H. Bos, and C. Giuffrida, "StackArmor: Comprehensive Protection from Stack-Based Memory Error Vulnerabilities for Binaries," in *Proceedings of the Network and Distributed System Security Symposium (NDSS'15)*, (San Diego, CA, USA), Internet Society, February 2015.

[15] D. Andriesse and H. Bos, "Instruction-Level Steganography for Covert Trigger-Based Malware," in *Proceedings of the 11th Conference on Detection of Intrusions and Malware & Vulnerability Assessment*, DIMVA'14, (London, United Kingdom), Springer-Verlag, July 2014.

[16] D. Andriesse, C. Rossow, B. Stone-Gross, D. Plohmann, and H. Bos, "Highly Resilient Peer-to-Peer Botnets Are Here: An Analysis of Gameover Zeus," in *Proceedings of the 8th IEEE International Conference on Malicious and Unwanted Software*, MALWARE'13, (Fajardo, Puerto Rico), IEEE Computer Society, October 2013.

[17] D. Andriesse and H. Bos, "An Analysis of the Zeus Peer-to-Peer Protocol," May 2013. Technical Report IR-CS-74, VU University Amsterdam.

[18] C. Rossow, D. Andriesse, T. Werner, B. Stone-Gross, D. Plohmann, C. Dietrich, and H. Bos, "P2PWNED: Modeling and Evaluating the Resilience of Peer-to-Peer Botnets," in *Proceedings of the 34th IEEE Symposium on Security and Privacy*, S&P'13, (San Francisco, CA, USA), IEEE Computer Society, May 2013.

Books and Book Chapters

[1] D. Andriesse, *Practical Binary Analysis.* No Starch Press, 2018. ISBN-13: 978-1-59327-912-7. Translations in Polish, Korean, Japanese, and Chinese (Mandarin).

Patents

[1] R. K. Konoth, A. Tatar, M. Oliverio, D. Andriesse, H. Bos, C. Giuffrida, and K. Razavi, "Computing Device with Increased Resistance Against Rowhammer Attacks." U.S. Patent Application (pending) US 2020/0012600 A1, January 2020.

Reviewing

May'24	Program committee member, *27th International Symposium on Research in Attacks, Intrusions and Defenses (RAID'24)*, (Padua, Italy), October 2024
Feb'23	Program committee member, *17th IEEE Workshop on Offensive Technologies (WOOT'23)*, (San Francisco, CA, USA), May 2023
May'21	Reviewer, *ACM Transactions on Programming Languages and Systems*
Dec'19–Jan'20	Program committee member, *Workshop on Binary Analysis Research 2020 (BAR'20)*
Oct'19	Reviewer, *IEEE Security & Privacy Magazine*
Nov'18–Feb'19	Program committee member, *4th IEEE European Symposium on Security and Privacy (EuroS&P'19)*, (Stockholm, Sweden), June 2019
May'18–July'18	Program committee member, *25th ACM Conference on Computer and Communications Security (CCS'18)*, (Toronto, Canada), October 2018
May'18–June'18	Program committee member, *12th USENIX Workshop on Offensive Technologies (WOOT'18)*, (Baltimore, MD, USA), August 2018
July'18	Reviewer, *ACM Computing Surveys (CSUR)*
Feb'18–Mar'18	Program committee member (short track), *38th IEEE International Conference on Distributed Computing Systems (ICDCS'18)*, (Vienna, Austria), July 2018
Aug'17	Reviewer, *IEEE Security & Privacy Magazine*, special issue "Hacking Without Humans"
May'17	Reviewer, *Journal of Computer Security*
Sep'16	Reviewer, *22nd ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS'17)*, (Xi'an, China), April 2017
July'16	Reviewer, *11th International Conference on Malicious and Unwanted Software (MALCON'16)*, (Fajardo, Puerto Rico), October 2016

Teaching

2018	**Secure Programming**, *VU University*, Amsterdam, (B.Sc.).
2013–2017	**Binary and Malware Analysis**, *VU University*, Amsterdam, (M.Sc.).
2012–2017	**Computer and Network Security**, *VU University*, Amsterdam, (M.Sc.).
2014–2016	**Computer Networks Excellence Track**, *VU University*, Amsterdam, (B.Sc.).
2011–2016	**Computer Networks**, *VU University*, Amsterdam, (B.Sc.).
2014	**Security**, *VU University*, Amsterdam, (B.Sc.).

2011–2014	**Computer Systems**, *VU University*, Amsterdam, (B.Sc.).
2012	**Internet Programming**, *VU University*, Amsterdam, (M.Sc.).
2011	**Advanced Programming**, *VU University*, Amsterdam, (B.Sc.).
2009–2011	**Data Structures and Algorithms**, *VU University*, Amsterdam, (B.Sc.).
2008–2011	**Introduction to Programming**, *VU University*, Amsterdam, (B.Sc.).
2010	**Online Information Systems**, *VU University*, Amsterdam, (B.Sc.).
2009–2010	**Logical Structures**, *VU University*, Amsterdam, (B.Sc.).
2009	**C/C++**, *VU University*, Amsterdam, (B.Sc.).